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AN EPIDEMIC OF TRACHOMA AMONG THE CHILDREN OF AN ORPHAN ASYLUM.

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The paper which was recently presented to the New York Academy of Medicine by Dr. R. Derby on infectious eye dis-diseases in the public institutions of New York, prompts me to report here shortly an epidemic of trachoma in the German Protestant Orphan Asylum of this city, which I had occasion to observe almost from the beginning.

Two years ago in May, the physician of this institution, which by the way is one of the best managed and cleanliest kept of its kind, brought a girl to my office on account of an eye affection, which she claimed to have first noticed when coming across the ocean several months previously. She had trachoma in an advanced stage with pannus and ulceration of the cornea. I advised absolute isolation, and treated the child myself for about ten weeks with cuprum sulphuricum in substance, bathing with cold water and instillations of atropia, and at times an ointment containing yellow oxide of mercury was substituted for the copper. She improved rapidly under this treatment, which was later on applied by the physician of the institution. I was told that two or three other children complained of their eyes and asked to have them brought to me, but this was not done.

On the 4th of October of the same year, I was called to the

Asylum, because a great many of the children now complained of their eyes. I found that of the sixty-three children who were the inmates of that institution, no less than forty-three had trachoma of the lids in all stages, and about twelve more were evidently already infected.

I heard now that isolation had been impossible, as there was no sick room large enough to accommodate the increasing number of infected children, and they had been playing and going to school together all the time. Yet, each had his separate bed, washing apparatus, towels, etc. The institution, since its existence, had been so fortunate as to have but little sickness, and the necessity of building a separate house for their sick children had never been brought home to the otherwise excellent trustees and managers of the asylum. They have had such a house erected now.

During the following months all remaining children, excepting four, were also infected.

Isolation being impossible, this was not to be prevented. I at once advised to keep all children out of school, and not to admit any new ones to the asylum, which advice was complied with. I then treated them, with the assistance of the physician ot the asylum, with sulphate of copper or yellow oxide of mercury (and atropia, etc., when necessary). This treatment has been kept up ever since, and during the whole period pannus made its appearance only in one girl, and slight marginal ulceration of the cornea in only about half a dozen cases. In four cases I operated for strabismus convergens during the time of treatment, and the healing and effect of the operations were not interfered with by the trachoma. None of the adults living in the house were infected. After two months of regular careful treatment a number of the children could be put on a milder astringent treatment, and soon afterwards be discharged. Thus the number of badly affected ones grew steadily less, and during the summer of last year quite a large number of the children could go to school again. Of late there have been only four girls left, who had made but very little progress, and I decided to use jequirity powder on their lids. This was done with a very happy result, and the epidemic may now be considered at an

end, although a number of the children are yet being treated with astringents.

The house in which these children live lies about four miles from the center of the city, surrounded by a large yard, with beautiful trees, and in a very healthy locality and atmosphere. There is hardly any doubt but that the affection has been imported into this asylum by the first patient, and from the outside.

The experience which this asylum has gone through shows plainly how carefully children, who are admitted to such an institution, should be examined, and especially with regard to their eyes. On the other hand, there should always be a chance for absolutely isolating, not only the children who suffer from an infectious eye disease, but from any infectious disease.

Besides the cases with strabismus only one, a boy, presented a complication. He had stricture of the nasal ducts; but I never probed them, as the obstructions gradually disappeared with the trachoma. Whether there was any trachoma in the lachrymal sac, or what the obstructions were, I am, of course, unable to state.

The uniformly good results and the freedom from corneal affections (except in a few cases) speak strongly in favor of a careful treatment with cuprum sulphuricum, although the progress was sometimes rather slow.

THE PRESENT STANDING OF TOBACCO AMBLYOPIA.

BY J. L. MINOR, M. D. OF MEMPHIS, TENN.

Mackenzie in his great work on diseases of the eye, described a class of cases, characterized by reduced vision or loss of sight, occurring in persons who used tobacco excessively; and, supposing that tobacco was the cause of the trouble, he classified them under the head of *tobacco amaurosis*. The weight of Mackenzie's authority was sufficient in itself to guide many, and to influence most observers before the ophthalmoscope was introduced. Since its advent however, the term *amaurosis* has had an increasingly restricted application in ophthalmic practice. Yet *tobacco amaurosis* has retained its place in our nomenclature, and is treated of, in many of our text books, as a distinct and characteristic affection. Many cases have been reported, and numerous articles have been written to prove its existence.

When it is considered that tobacco is used by a large proportion of the male population of the world—and frequently to excess—it is to be wondered at that cases of *tobacco amaurosis* are not more frequently met with. And stranger still is it, to see competent ophthalmologists make the diagnosis of *tobacco amaurosis*, in cases with clearly marked symptoms of brain or spinal cord disease, or other affections which may and do cause diminution in or loss of vision the same in kind as is claimed for tobacco. This must necessarily lead to one of two conclusions, either that *tobacco amaurosis* has a much wider application than its most ardent advocates claim, or that there is a lack of proper care in eliminating other causes of reduced vision. To reach a correct understanding of the subject, it will be necessary to study the claims made by the advocates of the *tobacco amaurosis* theory, and the facts upon which these claims are based; and finally if possible to subject these *facts* to the crucial test of experiment. This I shall attempt to do: and without endeavoring to give an exhaustive résumé of the literature. I shall limit myself to such text-books as I have at my command, and to a

few of the most frequently quoted articles which have appeared in medical journals.[1]

The text-books which I have consulted show anything but unanimity of opinion. While some of them speak positively of the existence of *tobacco amaurosis*, others refer to the subject with a vagueness of xpression that at least suggests a lack of positive conviction, and a few deny its existence entirely. This variety of opinion is due to a difference in interpretation of facts. The works which adopt the theory, accept it with statements more or less positive and without argument: while the doubting ones usually go into detailed reasoning in support of their statements. And in reports of cases there seems to have been too great a readiness to attribute to tobacco symptoms which might be ascribed to other causes—causes which are quickly recognized when tobacco is not used. Of the text-books which stand more or less positively committed to the theory of *tobacco amaurosis* may be mentioned.

(1.) *Mackenzie*, who has already been sufficiently referred to.

(2). *Powers* gives tobacco as a cause of optic nerve atrophy, and quotes the observations of Mr. Wordsworth.

(3). *Bader* treats systematically of *tobacco amaurosis*; and under this heading says that post-mortem examinations have shown traces of basilar meningitis which affected the optic nerves and other nerves of the face.

(4). *Green* gives his own views, which he says may be taken substantially as those of American ophthalmologists. He says that a large proportion of cases of optic nerve atrophy which have been observed have been in cigar-makers and workers in tobacco. They usually use tobacco freely. Inveterate drink-

1. I have attempted to reach the *popular* medical opinion concerning *tobacco amblyopia*, and consequently have relied chiefly upon text-book's on ophthalmology, because it was thought that the drift of professional opinion could be more easily and correctly reached by this method than by any other. Text-books are usually written by representative men, who's opinions have been formed, not alone by close observation of their own, but by careful analyses of current opinions; and thus formed they reach students and practitioners, who accept them as authorities and adopt their views. This must be my excuse for omitting to mention many able articles which have appeared in medical journals.

ers, who are usually inveterate smokers, are also liable to suffer from amaurotic affections.

(5). *Gowers* gives tobacco as a cause of amblyopia, and refers to the writings of Hutchinson, Hirschberg and Foerster.

(6). *Nettleship* says that his own opinion is that tobacco is the essential agent in producing *tobacco amaurosis*, but admits that the share to be attributed to alcohol, general exhaustion, anxiety, underfeeding, dissipation, etc., must not be overlooked, so long as competent observers hold that the disease may be brought on by such influences collectively, without tobacco.

(7). *McNamara* says that he has "no hesitation now, in affirming with Dr. Webster, that the use of tobacco alone, or of tobacco and alcohol combined, may produce impairment of vision, ranging from the slightest blurring to total blindness.

And to these may be added:

(8). *Juler*, who believes in and describes the affection, and

(9). *Swanzy*, who, under the head of central amblyopia, says that the most common cause of this disease is alcohol, or tobacco, or both.

Of the authors who give their *quasi* acquiescence to the theory, may be mentioned:

(10). *Stellwag*, who says "it is said that the abuse of tobacco plays a part in the production of amaurosis, and that the fact is corroborated by the recession of the affection where tobacco is discontinued. It is said to appear independently, but is most frequently associated with alcohol.

(11). *Noyes*, after referring to the difficulties of separating alcoholic from tobacco cases, says they both commonly combine. He, however, describes the two conditions separately, and refers to the writings of Hutchinson and Foerster.

(12). *Williams*, in treating of chronic optic neuritis, cites Hutchinson's observations, and without committing himself to an opinion further than saying that abstinence from tobacco is essential in treatment, closes the subject.

(13). *Mittendorf* says that the abuse of tobacco is not a very frequent cause of amblyopia, and admits that in most cases alcohol is also used; and that American ophthalmologists are of the belief that tobacco takes a less active part in producing amblyopia than alcohol.

(14). *Wolf* refers to the divided opinion as to the production of amblyopia by tobacco and alcohol, and says that there is no doubt that smoking, and drinking of spiritnous liquors has a great tendency to produce amblyopia.

(15). *Wecker* mentions tobacco and alcohol as being causes of amblyopia, but says that good authorities deny that tobacco has any causative influence in that direction. He saw many cases during the siege of Paris who were suffering from exhaustion and fatigue.

(16). *Wells*, while he does not subscribe to the belief that tobacco alone will produce amblyopia, describes the affection, and admits that it may enter into the causation of impaired vision. He quotes Mr. Hutchinson and gives his description of *tobacco amaurosis*, as follows :

"The cases which form the subject of this paper are recognized by the loss of vascular supply to the optic nerve itself. There is not usually much diminution in the size of the vessels which supply the retina, and often these remain of good size, when the nerve itself is as white as paper. The first stage (one which is usually very transitory and perhaps often altogether omitted) is one of congestion, during which the disc looks too red. Then follows pallor of the outer half of the nerve—that part which is nearest the yellow spot. During these stages the patient complains merely of dimness of vision. Everything seems in a fog to him, but he has no pain in the eyes, nor any photopsia or photophobia. In a later stage the whole of the optic disc has become pale, even to blue-milk whiteness; and later there is proof, not only of anaemia of the nerve, but of advanced atrophy. The stages generally occupy from four months to a year. In many cases the patient becomes at length absolutely blind; but in others the disease having advanced to a certain point is arrested. There is from first to last no evidence of disease of any structure in the eyeball, excepting the optic nerve. And even after years of absolute blindness, the retina, choroid, etc., remain healthy, and their blood supply is good. Almost always both eyes are affected, and progress almost *pari passu*. Sleeplessness, a little giddiness and a little headache are the only constitutional symptoms which attend it, and these disap-

pear at a later stage, and the patient regains his usual health. As there is no tendency to fatal complications, opportunities for post-mortem examinations of the brain are hardly ever obtained."

This is in the main the accepted description of the affection. Foerster has pointed out the fact that the failure in vision is due to a reduction in visual acuity over a small area in the center of the fundus—a central scotoma, while the visual field remains normal in its peripheral parts. The scotoma is transversely oval, extending usually from the point of fixation, which it involves, to the blind spot corresponding to the optic nerve entrance. It belongs to the negative variety, and is most easily detected with colors that are in the normal state best seen in the center of the field, i. e., red and green, which are not recognized in the scotoma, though the peripheral color perception and field may be entirely normal.[1]

Patients with this form of amblyopia find their way about with much greater ease than would be anticipated from the degree of vision possessed, because the periphery of the the retina retains its normal amount of vision; and for the same reason the pupils are smaller in this than in other forms of amblyopia, for the light, being perceived to the normal extent in the periphery of the retina, excites contraction of the pupils. Vision is better in dull illumination, because under this influence the pupils dilate and allow more light to enter the eye.

Articles which have appeared in medical journals by Hutchinson, Foerster and Wordsworth, are frequently referred to in support of the *tobacco amaurosis* theory, and they will be noticed after we have examined some of the text-books that deny the existence of this form of amblyopia altogether; and, first of these, may be mentioned.

(17). *Carter*, who points out the fact that tobacco, if a cause of optic nerve atrophy, is by no means the only one, for thousands who smoke excessively experience no inconvenience; hence, there is liability to mistake coincidence for cause. Reference is made to observers who have noticed that sufferers from

1. See article on Central Color Scotoma, by J. L. Minor in *Am. Jour. of Med. Sci.*, for April, 1882.

nerve atrophy are frequently great smokers. This statement is to be accepted as indisputable, because it comes from reliable and competent men; but when they say in such instances, much smoking is the cause of the atrophy, they step from the domain of observed facts and enter the debatable ground of opinion. After enumerating the various causes of optic nerve atrophy, he insists that these must be excluded before the diagnosis of *tobacco amblyopia* is made, and this he claims has not been done iu cases which have been reported. Mr. Carter was, himself, at one time stationed in Asiatic Turkey, where smoking is carried on extensively, yet he observed no cases of amaurosis. He quotes M. Farquhar, who was for many years surgeon to the British Consulate in Alexandria, as saying that he had examined many thousands of cases of diseased eyes, and that it was a mystery how few cases of amaurosis were seen, for the Egyptians smoke possibly more than the Turks. Mr. Dickson, physician to the British Embassy at Constantinople, wrote, "*Amaurosis*, taking the term in its widest sense, is not a common complaint in Constantinople, or in Turkey generally; and yet smoking tobacco is so prevalent a vice that it is practiced by the whole population, Mohammedans, Christians and Jews with hardly a single exception. The usual amount consumed by one person, per month, may be estimated at two and a half pounds." Mr. Dickson had found amaurosis frequent in Tripoli and in Northern Africa, where tobacco was little used. And Dr. Huebsch, an oculist in Constantinople, wrote that tobacco was used excessively by men, women and children, yet amaurosis was rarely seen; and that he had never been able to attribute amaurosis to the abuse of tobacco.

(18). *Allbutt*, after referring to the difficulty of isolating the antecedents of amaurosis, and of distinguishing which are the essential and efficient causes, says that much trouble is often experienced in saying which of the true causes is the actual cause. When it is desired to isolate tobacco, accident can only be eliminated by including a large number of, not amaurotics, but smokers, and comparing them with a like number of abstainers. He then gives his reasons for disbelieving in *tobacco amblyopia* as follows: First. "Amaurosis is very common, and is common

in certain districts especially, but in districts which do not coincide with districts of principal manufacture or consumption of tobacco. Secondly. Many causes are at work, in this present busy age especially, which may have far more to do with amaurosis. I may refer to alcohol as one of these: as another to the incessant overuse of the eyes in a large number of competitive trades, in which men especially are engaged. And again, to those many strains upon the mind and nerves, which overtask the nervous centers, and carry the optic nerve with them. Thirdly. In many cases of so called recovery from amaurosis on the omission of smoking, we have no certain evidence that the condition was not one of general anaemia—made especially manifest in that form of anaemia accompanying menorrhagia, lactation. * * * Fourthly. We have no satisfactory evidence that cases quoted have been observed for any length of time. Degenerative nervous diseases, as locomotor ataxia, general paresis and disseminated sclerosis are much more common in men than in women, and of such diseases, atrophy may be the first sign." He further states that in ophthalmic clinics, time is not afforded, nor is it the habit to make searching inquiry as to the presence or absence of obscure nerve disease; and that this poverty of time, and inadequacy in history taking, is manifestly shown in most cases which are reported. Moreover, the symptoms and appearances which are given as peculiar to *tobacco amaurosis*, are the exact counterparts of cases which have been watched and observed throughout in many forms of cerebro-spinal disease.

(19). *Walton* concludes after much study, that there is no special effect exerted by tobacco upon the optic nerves.

(20). *Ely* examined over one hundred workers in tobacco. He tabulates 102 cases, and finds that 88 had normal vision, which he thinks, is as good a showing as would be obtained from 100 persons taken at random anywhere. He accounts for the reduced vision in the remaining cases, as being other than tobacco, except in two instances, which, he says, may be attributed to tobacco, provided one chooses to do so. Yet he admits that there is no positive proof one way or the other. In each of these cases vision was $\frac{20}{xxx}$.

If the statements of text-books and observers be taken as the

criterion of one's belief, it must be admitted that the existence of this form of *amaurosis* is doubtful. And these doubts are materially strengthened when it is considered that there are no symptoms, taken singly or collectively, which are specially distinctive of or peculiar to tobacco poisoning. On the other hand, the description of the affection is exactly the same as that of retro-ocular neuritis, an affection often observed in individuals who do not use tobacco in any form. And moreover, while general pathologists admit that *tobacco* may cause *functional disturbance*, they do not recognize in it, an agent capable of producing *organic change in any tissue of the body*; whereas, they attribute to the effects of alcohol, changes which are so characteristic as to be pathognomonic of alcoholic abuse. These changes are often seen in the brain in the form of a chronic interstitial inflammation of its membranes, and the same lesions have been observed in the optic nerves from cases of chronic alcoholism. Many believers in *tobacco amaurosis* ascribe *also to alcohol* a form of amblyopia, differing from that produced by *tobacco*, only in presenting a *round* instead of an *oval* scotoma, and a little duller appearance of the optic nerve. Sufferers from *tobacco amaurosis* are almost invariably free consumers of *alcohol*, and however much at variance with the ordinary practice of ophthalmologists it may be, the possible influence of *alcohol* should always be excluded before the diagnosis of *tobacco* amaurosis is made. The same applies, of course, to all the various causes capable of producing amblyopia. And while it must be granted that positive evidence is often unattainable in medicine, it may be insisted upon that inferential conclusions must be based upon observations complete enough to combat adverse opinion.

(21). Mr. Jonathan Hutchinson, who has written very extensively upon the subject of *tobacco amanrosis* presents his views and his experience concerning the subject, in the *Royal London Ophthalmic Hospital Reports for* 1874. He there reviews his previously reported cases, and adds a few others. He confines his criticisms to 64 cases, having excluded 63 cases previously reported as being imperfect; and as Mr. H. is frequently quoted I shall consider this report with some detail. For not only is it referred to as proving the existence of the affection, but his per-

centage of cures (75 p. c.) is adduced as strengthening his conclusions both as to the nature of the disease and its amenability to treatment. He says of these cases: "No doubt some of the patients were drinking to excess, but most of them were smoking to excess, and such cases prove nothing as to the direct power of alcohol in causing amblyopia." "In a certain number besides these known to be drinkers, habitual indigestion and failure in appetite is noted." "A history of special anxiety or trouble of some kind, or of overwork was given by several (9) patients, and would probably have been even more common if always asked for." "Another small group are noted as constitutionally nervous." And so on follows in regular order, an honest exposition of features presented by other groups of cases, which will enable anyone to formulate his own conclusions.

My analysis of his cases, as obtained from this report, and when possible by reference to the articles in which they originally appeared, is as follows. *Consumers of both alcohol and tobacco*, 26 cases (4, 6, 7, 10, 12, 13, 14, 15, 23, 24, 32, 33, 35, 36, 37, 38, 40, 42, 43, 45, 46, 51, 53, 54, 58, 59). *Clearly of other than tobacco origin*, 5 cases (30, 43, 54, 55, 56). *Probably of other origin*, 21 cases, (1, 20, 21, 22, 31, 32, 35, 36, 39, 38, 40, 41, 42, 46, 47, 48, 50, 51, 61, 62, 63.) *Testing incomplete.* Vision given for first visit and not again referred to, 1 case (52). Reliance upon patient's statement alone, 3 cases (9, 18, 20). Vision for distance taken at first examination only, the subsequent tests being for the near, in which there is improvement, 5 cases, (8, 19, 26, 27, 28). Vision taken for the *near* at both examinations, there being improvement at the final testing, 2 cases (2 and 29), one case (11) had had iritis and floating objects in the vitreous. Three cases (5, 16, 25) are without history. Five cases (3, 17, 49, 60, 64) remained stationary for distant vision, and one case (57) became worse. Two cases (34, 44) had suffered from failure of appetite and digestion, with too little sleep in one case and too much in the other. The vision was respectively in these two cases: $\frac{20}{L}$ which improved to $\frac{20}{XXX}$, and $\frac{20}{cc}$ which improved to $\frac{20}{XL}$. Thus the 64 cases are accounted for. They all used tobacco, certainly; but that there was any direct connection between the use of that agent and the amblyopia, or

between the discontinuance of tobacco and improvement in vision, is far from proven.

(22). *Wordsworth* reports three cases of optic nerve atrophy going on to blindness in subjects who used tobacco, and calls them cases of *tobacco amaurosis.* No evidence is given that other causes were eliminated. The histories are too meagre to justify any conclusions; and, moreover, it is claimed by advocates of *tobacco amaurosis* that this form of amblyopia does not lead to complete blindness.

(23). *Hirschberg*, in an article on tobacco amblyopia, ascribes some cases to *tobacco*, others to *alcohol*, and finally a few, presenting the same characteristics, where neither tobacco nor alcohol was used, are attributed to *retro-ocular neuritis.*

(24). *Webster* reports twenty cases of amblyopia occurring in individuals who used tobacco and alcohol to excess. In one case only was tobacco used alone. The vision in this case was $\frac{5}{cc}$ in each eye when first seen. Tobacco was discontinued, and one week later his vision was $\frac{5}{c}$ in the right eye, and $\frac{5}{cxx}$ in the left. He was then placed, first upon strychnia, and later upon a mixture containing iodide of potash, and three months after he was first seen, vision was $\frac{20}{LXX}$ in each eye. Dr. Webster's experience enables him to "conclude that *amblyopia* from *tobacco* alone does occur, but in this country somewhat rarely." He further states his evident bias in favor of *tobacco amaurosis* as follows: "I must confess, however, that when a man comes to me on account of failing vision, and I find the characteristic 'chloroform ordor' in his breath, and the scent of tobacco issuing from every pore of his skin, I at once suspect that I have discovered the cause of his affection, and am only likely to have my opinion *changed by positive evidence*, ophthalmoscopic or otherwise."

In the discussion which this article elicited at the New York County Medical Society, Dr. Roosa too a strong stand against the theory of *tobacco amaurosis*; and Dr. Pomeroy also doubted its existence. The other speakers agreed more or less completely with the author of the paper. They merely expressed *opinions* however, and adduced no facts to prove the correctness of their views.

Rather early in my practice of ophthalmology I treated a case of *tobacco amaurosis* to a successful termination. I received a rude shock, however, when the patient told me that he had taken my medicine, but had continued the use of tobacco throughout the entire course of treatment. I was forced into admitting my mistake, and became more careful in my observations, and up to the present time I have not seen a case in which I felt justified in making the diagnosis of *tobacco amaurosis.* I present the notes of ten cases which I have treated and think that my views will receive corroboration by the facts illustrated in their histories.

Case I. Jan. 16, 1884. I. D., æt. 60, male, married, shoemaker, a healthy man with a large family, whose individual and family histories are entirely negative. Takes no alcoholic drinks; smokes almost constantly—twenty-five or thirty pipes per day. A searching examination elicits no symptoms or evidences of trouble elsewhere than in the eyes. There has been gradual failure of vision for the past three months. Vision right eye, $\frac{1}{c\,c}\frac{1\text{-}2}{}$; left eye, $\frac{3}{c\,c}$. Visual fields show no concentric limitation, but peripheral vision, which is normal in the outermost limits of the field, becomes rapidly reduced as the center is approached. Colors are distinguished in the center of the field, and there is no defect in their peripheral perception, yet they are as bright 20° from the center as they are at the point of fixation. All of which means that the central portion of the retina is impaired, both as to acuity of vision and color perception, while the periphery remains normal in these particulars.[1]

The ophthalmoscope shows a normal fundus, with the exception of the discs, which are a little redder than normal, the veins possibly are enlarged and sluggish. He has the "stale tobacco odor" to a marked degree.

Treatment.—Potassium iodide, gr. v., in infusion of gentian, ℥i, three times a day, the tobacco to be neither stopped nor reduced.

Jan. 18. Vision right, $\frac{3}{c\,c}$; left, $\frac{1\,5}{c\,c}$.

Jan. 23. Vision right, $\frac{1\,2}{c\,c}$; left, $\frac{2\,0}{c\,c}$.

1. See article on "The Field of Vision," by J. L. Minor, *Am. Jour. of the Med. Sci.*, July, 1883.

Feb. 11. Vision $\frac{20}{CC}$ both. Glasses now for the first time improve vision. + 14 s V. = $\frac{20}{LXX}$, both. (Glasses had been tried before, for this degree of hyperopia was recognized with the ophthalmoscope.) The treatment, which up to this time has remained unchanged, is now varied, the gentian and iodide being discontinued, and tinct. of nux vomica, gr. x. t. d., substituted.

Feb. 22. With glasses, vision, right, $\frac{20}{LXX}$; left, $\frac{20}{XXX}$. With + 6 s reads newspaper print.

April 4. With glasses, vision, right, $\frac{20}{L}$; left, $\frac{20}{XX}$. The visual fields have improved *pari passu*, with the vision. The ophthalmoscopic appearances are now normal. The change was so gradual as to be inappreciable during its progress.

May 9. Vision and condition unchanged; works at his trade as well as he ever did.

Case II. May 21, 1880. J. K. aet. 40. Male. Married. Liquor dealer. No history of constitutional or other serious disease. Drinks freely and chiefly whiskey, but does not become intoxicated. Smokes ten or fifteen cigars daily, and often a larger number. For one month and a half vision has been failing. Slight pain in eyes, attributed to strain. No evidence of brain or spinal cord trouble or of any other form of disease. Vision both $\frac{20}{CC}$. No limitation of visual fields, and peripheral acuity of vision is normal. Fields for color not contracted, but there is a central transversely oval scotoma for both red and green, extending from a few degrees to the temporal side of the point of fixation, across to the optic nerve entrance. Ophthalmoscope shows a very low grade of optic neuritis. Treatment: Potassium iodide gr. x. in infusion of gentian ℥i three times daily. Liquor to be stopped and tobaccocontinued.

May 28. Vision $\frac{20}{LXX}$, both. June 4, vision $\frac{20}{XL}$ both. June 20, vision $\frac{20}{XXX}$ both. July 6, vision $\frac{20}{XX}$ both. The color perception is normal throughout the visual field, the scotoma having disappeared. The discs gradually cleared and are now essentially normal. Treatment was continued for a month longer, when it was stopped the condition being the same as at the last testing. The cure is considered permanent, for the patient was told to report again, in event of a relapse; and he has not been seen since. The stale tobacco odor was very noticeable in this patient.

Case III. May 2, 1883. C. W. aet. 46. Married. Liquor dealer. History negative, never having experienced disease of any kind. Drinks, not to excess, but frequently and with regularity. Smokes ten or twelve cigars daily. Vision $\frac{20}{CC}$ both ($\frac{20}{LXX}$ with + 24 s.) Visual fields not contracted and peripheric vision normal. Color fields normal, but there is decided dulness of perception for red and green, in the center of the field. Ophthalmoscope shows optic neuritis of a very slightly pronounced character. No signs or symptoms of disturbance elsewhere than in the eyes.

Treatment—Iodide of potassium in infusion of gentian gr. x t. d. Discontinuance of alcohol—tobacco as before.

May 14, vision $\frac{20}{L}$ both, with + 24.S.

May 20, vision $\frac{20}{XL}$ both, with + 24.S.—Still drinks a little.

June 1, vision $\frac{20}{XXX}$ both, with + 24.S.

June 20, vision $\frac{20}{XX}$ both, with and without glasses. Visual fields normal and color perception normal throughout the whole field. The discs are normal. Cure probably permanent—for the patient did not report again, as he was told to do in event of a relapse.

Case IV. Jan. 30. 1884. D. Q. æt. 50. Male. Married. Laborer. History negative, uses alcohol freely but not to excess. Smokes almost constantly twenty to thirty pipes per day. Vision failing for four months. Can elicit no symptoms of other trouble—Vision, right $\frac{20}{XXX}$, left $\frac{20}{XL}$. Visual fields contracted. Peripheric vision normal. Color field normal. There is no color scotoma, but colors are as readily perceived 20° from the center, as at the point of fixation i. e. incomplete, central colour scotoma—Ophthalmoscope shows a cloudy optic nerve in each eye.

Treatment iodide of potassium gr. v. in infus. gentian. t.d. Alcohol to be stopped—tobacco continued.

Feb. 4. Vision $\frac{20}{XXX}$ both. No defect of visual field or colour perception. Ophthalmoscope shows little change.—When see a month later condition was the same as at last visit. The stale tobacco odor, well marked in this patient.

Case V. Dec. 17, 1882. P. B., æt. 43, male, married, policeman, a healthy, robust man, whose history, both family and indi-

vidual, is entirely negative. Drinks moderately, but never to excess. Smokes freely and chews almost constantly. Trouble with eyes for a year, muscæ volitantes and reduced vision. Occasional pain in temples, cardialgia, flatulence, constipation. No other symptoms. Vision right, $\frac{20}{L}$, left, $\frac{20}{xL}$; visual fields normal; peripheric vision normal. The only color defect is dulness in perception of red and green in the center of the field over an area of 10° radius. Ophthalmoscope shows a low grade of optic neuritis. Treatment, iodide of potassium and infusion of gentian, to stop alcohol and continue tobacco. This treatment was continued, and no note was made until Feb. 2, 1883, when vision was $\frac{20}{xx}$ both, and color perception normal. Discs normal.

Aug. 5—Relapse. Vision right, $\frac{20}{c}$; left, $\frac{20}{L}$. Low grade of neuritis placed on same treatment.

Sept. 30.—Vision $\frac{20}{xx}$ both. Discs a little cloudy, but less inflamed.

Feb. 1884.—No relapse. Discs normal. Stale tobacco odor very noticeable. Before consulting me, this patient had seen two oculists of repute, both of whom diagnosticated tobacco amblyopia; and, while under their observation, his tobacco was discontinued, and strychnia was administered hypodermically and internally. He experienced no improvement until he placed himself under my care, during which time he used tobacco as freely as he had ever done.

Case VI. April 18, 1883. J. T., æt. 45, male, married, laborer, a strong healthy man. Chancroids twenty years ago, and suppurating buboes at the same time. No symptoms of syphilis. "Never had a day's sickness." Drinks freely, but not excessively. Smokes a great deal and chews almost constantly. Vision failing for past six weeks; can find absolutely no other symptom. Vision, right, $\frac{20}{c}$ left, $\frac{20}{L}$. Fields of vision and peripheric vision normal. Colors as bright at 20 degrees from center, as at point of fixation; otherwise color fields are normal. Ophthalmoscope shows a low grade of optic neuritis. Treatment, potassium iodide and gentian. To stop alcohol and continue tobacco.

May 9, vision $\frac{20}{cc}$ both.

June 15, vision $\frac{18}{cc}$ both, and, finding suggestive whiteness of

the outer halves of the discs, iodide was stopped and strychnia substituted.

April 5, 1884. After last visit, vision became so bad that he could hardly find his way about. He gave up his work, became despondent, stopped medicine, and, having nothing else to do, smoked or chewed tobacco during waking hours.

In Dec. 1883, vision began to improve, and, in the course of a month, reached its present condition $\frac{20}{xx}$ both. Visual fields and color fields normal. The discs are normal—has been at work and uses eyes as well as he ever did for reading and all purposes, stale tobacco odor throughout.

Case VII. Aug. 25, 1883. Dr. S. S., æt. 35, oculist. Drinking for a considerable time, not excessively, but freely and regularly. Smokes a great deal. Vision bad one month, though it is now improving. Complains of nothing else than eye trouble. Vision, right, $\frac{20}{L}$; left, $\frac{20}{xxx}$. Fields of vision, color perception, and color fields normal. Pupils small, optic discs hazy, with indistinct outlines. Suggested iodide of potash and discontinuance of alcohol. Allayed the fear of tobacco amblyopia, and told him to continue smoking.

Dec. 1st the doctor writes: "Happy to say my sight has come back to nearly normal without quitting tobacco." This is the statement of an oculist of good standing, who believed, until he was assured to the contrary, that he had tobacco amblyopia.

Case VIII. Jan. 23, 1884. H. K., æt. 40, male, married, laborer, chancre fifteen years ago with some secondary but no tertiary lesions. Gonorrhœa two years ago and now has stricture, uses both alcohol and tobacco to excess. Occasional headaches, and at times, pain in eyes. Failing vision for one month. Vision, $\frac{20}{C}$ each. Visual fields and peripheric vision normal. Color perception dull for green and red in center of field, otherwise normal. Ophthalmoscope shows low grade of neuritis. Treatment, iodide of potash and discontinuance of alcohol. Tobacco continued.

Feb. 28, V=$\frac{20}{xL}$ both. Not seen again.

Case IX. Nov. 1882. T. B. æt. 47, male, married, laborer, has locomotor ataxia of fifteen years standing. Smokes sixteen or eighteen cigars daily, and is temperate in the use of liquors.

Vision bad for more than a year. No other symptoms. Vision $\frac{20}{CC}$ and with + 2 Ds. $\frac{20}{C}$ both. Visual fields concentrically limited. Perception of colors unreliable. Discs, white, atrophic—vessels small. Treatment. Placed upon mixed treatment and told to discontinue both alcohol and tobacco, neither of which was done.

Feb. 1883. Vision, right, $\frac{20}{XL}$; left, $\frac{20}{LXX}$.

April, 1883. Vision $\frac{20}{XXX}$ both. Visual field and color defects remain unchanged. No improvement in symptoms of ataxia or in appearance of discs. Tobacco was never reduced, and stale tobacco odor was noticeable throughout the time during which he was under observation.

Sept. 1883. Vision, $\frac{20}{L}$ both.

CASE X. Nov. 30, 1883. H. B., æt. 61, male, married, tailor, one year ago treated for "amblyopia ex abusu," which yielded to a month's treatment (further particulars not noted). Smokes a great deal and drinks freely but not excessively. Headaches, dizziness, occasional sick stomach. No evidence of spinal trouble. Vision, right, $\frac{3}{CC}$; left, $\frac{1}{CC}$. Visual field concentrically limited, color perception unreliable. Ophthalmoscope shows a subsiding neuritis, passing into atrophy. Treatment: Placed upon iodide of potash and mercury, alcohol stopped, tobacco continued.

Dec. 3. Vision, right, $\frac{15}{CC}$; left, $\frac{6}{CC}$.

Dec. 17. Vision, right, $\frac{20}{CC}$; left, $\frac{15}{CC}$.

April, 1884. Condition the same; nerves look whiter.

Tobacco was used excessively in all cases, and its use was continued throughout the entire course of treatment in every instance. In Case I., tobacco alone was used, and the most marked improvement took place, a perfect cure, from a condition of almost helpless blindness.

Alcohol was used in moderation in cases 5 and 9, and freely in cases 2, 3, 4, 7, 6, 8, 10. Its use was discontinued.

CASE IX, was probably of spinal origin, and CASE X was of cerebral origin.

Vision was improved to $\frac{20}{XX}$ in six cases, to $\frac{20}{XXX}$ in two cases, to $\frac{20}{XL}$ in one case, and to $\frac{20}{CC}$ in one case, which gives us 90 per cent of cases in which either a cure was effected or marked improvement resulted.

I found the iodide of potash the most useful remedy, though strychnia acted beneficially in some cases. I was guided by the appearance of the disc in my selection of the one or the other of these drugs. The iodide was given when the nerves were red, and strychnia when the nerves were whitish.

The first eight cases show conditions of marked similarity, i.e., impairment of the central portion of the retina, both as to visual acuity and color perception, while the periphery remains normal in these particulars. The entire absence of all but eye-symptoms, coupled with the favorable progress observed in these cases, is not suggestive of central origin, and further, the restriction of the trouble to the center of field indicates derangement of only a portion of the conducting apparatus of the eye, and since Samelsohn (25) described the course of the nerve fibers going to the macular region, localization has become possible.

In a case of central amblyopia observed by him during life, opportunity was afforded at the autopsy (death from heart disease) to trace the degenerated macula-lutea fibers from the macula to the optic foramen; at which point the disease began. "In the optic foramen the macula-lutea fibers constitute a circular bundle accompanying the axis of the nerve, and are surrounded equally on all sides by bundles which supply the peripheral parts of the retina." Anterior to the bony canal they pass from the axis to the side of the nerve, preserving, however, their form of a circular bundle until they arrive at the point of entrance of the central artery and vein. The vessels displace the fibers in such a manner that the sectional form of the bundle is wedge-shaped, the base of the wedge forming the side of the nerve, and this maintains until the papilla is reached. The anatomical relations of the nerve at the optic foramen are such as would favor interference with its lymph currents, or with its vascular supply at this point, and furthermore render it more prone to react to such agents or causes as are capable of producing parenchymatous changes. The selection of the center of the nerve trunk by the inflammatory process is attributed to the fact that the nerve is supplied with blood vessels which enter at the surface, and have their finest capillary plexuses, and therefore their most active interchange of fluids at the center. Such organs as the liver and

kidney, which are supplied by blood vessels ramifying from a central main trunk towards the periphery, suffer when inflamed, first and most in their peripheral parts.

Retro-ocular neuritis then, located at the optic foramen, offers the most plausible explanation of the conditions observed in the first eight cases, the changes in the papilla being secondary to this. And as to the cause of this post-ocular neuritis, it may be confidently asserted that tobacco took no active part. Alcohol is capable of being harmful, and is, I think, undoubtedly, responsible for some cases of retro-ocular neuritis. But it must be borne in mind that other causes are equally as important, and that differentiation is usually difficult and often impossible. The number of my cases is too small for general conclusions, but the improvement which was uniformly noted compares most favorably with figures given and claims made by Mr. Hutchinson and others, in reports upon *tobacco amblyopia*, when the discontinuance of tobacco was considered the most important step in treatment. The last two cases are related because they illustrate the marked improvement which may take place while tobacco is being excessively used. The cause of the eye trouble, in each instance, is to be sought in the central nervous system; yet, had discontinuance of tobacco been one of the elements of treatment, the improvement in vision would have been attributed to that fact by many observers, and the cases at once accepted as proving *tobacco amaurosis* would find their way into medical literature there to aid in buoying up a time honored, but very loosely applied, medical term.

Since writing the foregoing an article (26) by Dr. Coleman, of Baltimore, has come to my notice. He found "out of eighteen hundred and twenty-four eye cases, forty-six who had partial or total loss of sight, accompanied by conditions similar to those noticed in *tobacco amblyopia*." Thirteen cases were attributep to *tobacco*; nine to *tobacco* and *alcohol*, and twenty-four to *other causes*. Thirty-nine cases presented changes about the optic disc, and seven none whatever, and of these seven only one was attributed to tobacco. Considering the obscurity of many forms of disease of the nervous system which may have impairment of nutrition or of function of the optic nerves as a part, I should

say that the use of tobacco was a coincidence in his cases; and the improvement which was observed, I should attribute to the medicinal agents employed, or to the natural course of the disease, and not to the discontinuance of tobacco. I am aware that Foerster, Nettleship, Berry and others have reported cases where discontinuance of tobacco alone, without other treatment, was followed by marked improvement in vision. And these cases are at first sight strongly suggestive of a tobacco origin. But my own cases, in which improvement and cures resulted while tobacco was being excessively used, will off-set such an hypothesis, and disprove any conclusions drawn therefrom. The disease occurring as it does, in neurotic subjects, and resembling in many respects the *hereditary amblyopia* of Leber, and the *retinitis nyctalopia* of Arlt, shows to my mind no alliance with nor dependance upon tobacco.

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TWO CASES OF DISEASE OF THE OPTIC NERVES DUE TO CEREBRAL AFFECTIONS.

BY DR. C. BARCK, ST. LOUIS, MO.

I. K. R., aged five and a half, of German descent, was brought to my office Nov. 20, 1884, on account of failure of sight. The patient is a healthy looking, well developed girl; she has had no sickness besides the usual children's diseases. During the last three months she has frequently complained of slight headache, and for several weeks she has vomited regularly after meals. She was treated for a disease of the stomach. In the last two weeks the vomiting has stopped, but the headache was severer. Since that time the parents noticed that the girl could not see as well as before. She began to stumble when playing on the streets, became unable to thread a needle, which she was accustomed to do. During the last two or three days vision declined so rapidly that she could find her way with difficulty only.

The girl is the oldest child; she has one brother and one sister. Her grandparents and the mother are healthy. Her father is a strong-looking man, but potator. Neither eye diseases nor nervous diseases have so far been observed in the family.

The examination revealed: Both pupils nearly ad maximum dilated and reacting but slightly. V. R. cannot count fingers, but sees the hand excentrically, perception being preserved in the outer and upper regions of the retina.

V. L. counts fingers at one metre. Media clear. The ophthalmoscope reveals in R. a grayish-white, sharply defined, atrophic disk; arteries small. L. choked disk. The swelling of the papilla is of medium size; the outlines are indistinct and the surrounding retina is infiltrated to a considerable extent. The veins are enlarged and tortuous. The visual field could not be examined on account of the patient's age. The color perception is preserved to a certain degree; she distinguishes blue, red

and green. An examination of the heart, lungs and urine shows nothing abnormal. No fever. Sensibility and locomotion are normal; patellar reflex strong. No swollen glands are to be found; the teeth well developed, with the exception of the two lower incisor teeth which are shorter than normal, more transparent, and have rounded off, serrated edges.

The usual treatment was applied, consisting of Heurteloup, pilocarpine injections, iodide of potassium, etc., but without effect.

December 15, 1884. Patient has had a slight headache off and on; no vomiting. Vision R. and ophthalmoscopic appearance the same. L. Swelling of the papilla and infiltration of the retina reduced. Vision increased to counting fingers at 1½ metres.

January, 1885. No headache, nor vomiting. The retinal infiltration and swelling of the disk in the left eye have nearly disappeared; some white patches are making their appearance in the retina. V. has somewhat decreased. Color perception is more uncertain. The girl, who was intellectually well developed, is decidedly declining in this respect.

February 12, 1885. After two days' severe headache and vomiting, the left arm and left leg have suddenly become paralyzed. The headache is felt severest at the right side of the occiput. There is also a slight facial paresis of the right side.

The patient was now confined to bed for about six weeks.

The headache persisted for one week; then the paralysis began slowly to disappear, first in the arm, then in the leg. After two months she could walk. The ophthalmoscopic appearance is now nearly the same in both eyes, viz., an atrophic disk. Color perception is nearly lost.

April 1885. Patient was severely frightened and cried during a thunder storm. This was followed by pain in the back and a restless night. The next morning both legs were paralyzed; she had incontinentia alvi for two days; there was no incontinentia urinæ but urinating was difficult. This paralysis subsided more rapidly than the first, so that the girl could walk a few steps two weeks later. She was sent to the country.

Last examination December 16, 1885. Patient is reduced in

strength and intellect; she walks with difficulty and drags the left leg. The patellar reflex is rather increased on both sides, V. R. perception of light. V. L. counts fingers at $\frac{1}{2}$ metre; color perception abolished. Ophthalmoscopic appearance not much altered.

II. L. N., aged 19. The family physician, Dr. A. Kleinecke, with whom I saw the case, gave the following history: This patient had been a strong, healthy girl until two years ago. Had had frequent attacks of malarial fever but not otherwise been sick. Her mother, three sisters and one brother are healthy; her father and one sister died from acute pneumonia. There are no nervous or mental diseases, nor is there any lues in the family.

About two years ago the patient began to suffer from more or less severe headache and gastralgia. In the summer of 1884 while she was working, sudden paresis of the right leg and arm appeared after a fright. She had clonic spasms in this leg for some hours, and respiration was difficult. The paresis afterwards became changeable, but grew slowly worse. The headache was since this time nearly constant, but most severe in the morning, and most pronounced in the occiput. Lungs and heart were normal.

For about six months sight has been failing. The first examination, October 10, 1885, showed in both eyes a swollen and infiltrated optic disk, with indistinct contours and infiltration of the surrounding retina; the veins were considerably enlarged and tortuous. V. R. counts fingers at one metre; V. L. $\frac{3}{cc}$.

The following weeks she was mostly in bed. The leg now became totally paralyzed.

December, 1885. V. R. perception of light. V. L. counts fingers. In the R. E. the swollen disk changed into a white atrophic one.

January, 15, 1886. The last three weeks the patient suffered from violent vomiting and severe headache. She is now very weak and hardly able to answer. V. both 0. for about two weeks. R. E. as before, L. E. papilla not markedly swollen, but infiltrated, its limits indistinct. Arteries small. The left patellar reflex is strong, the right one rather increased.

REMARKS.—The first case was seen twice in consultation with Dr. L. Bremer, of this city. A definite diagnosis was not arrived at, the affection being considered due to a cerebral tumor or to a chronic basilar meningitis, the latter being the most probable. In favor of this diagnosis I may refer to the comparative amelioration after the severe paralytic symptoms, to the sudden beginning and the rapid course of the visual trouble in comparison with the slow course of the general disease and to the lack of constant headache. But the diagnosis of a cerebral tumor cannot be excluded with certainty. No cause for a tubercular meningitis is to be found. From the beginning I tried to find out whether there was any syphilis present, but I saw the father of the child only once, and he was not inclined to answer questions pointing in this direction. The younger sisters of the patient are healthy, and the mother never miscarried. The formation of the patient's *lower* incisor teeth, resembling exactly Hutchinson's teeth, was certainly striking. But this author mentions only the abnormity of the *upper* incisors and *second* teeth as indicative of syphilis. Our patient was only five and a half years old. Moreover during the course of the disease mercury has been given without effect.

The second case was seen in consultation with Dr. Wm. Hasard. It is a more typical case, and the diagnosis of a tumor of the brain, and probably of the cerebellum, is not likely to find any objections.

I would have preferred to relate these cases after a post-mortem examination had been made; but, as we will very probably not be allowed to make one in either of the two cases, it seemed to me unnecessary to wait with the report for their fatal termination, since the disease of the optic nerves has run its course in both. The gradual change of the choked disks into atrophic ones could be well observed in both cases. The strong patellar reflex, which was even increased in the paretic legs may here be especially mentioned in contradistinction to the diminution or lack of this reflex in atrophy of the optic nerve connected with tabes dorsalis.

CORRESPONDENCE.

"36' OR "40'—WHICH SHALL IT BE ?

Mr. Editor

With the increasing use by oculists of the metric system in measuring errors of refraction and in ordering correcting glasses, our opticians have sought to approximate glasses ground according to their focal distance in English inches by calling the unit, or Dioptre, 40 inches.

Most lenses are now ground here, but it is probable that the trial-cases in use by oculists are, ordinarily, of foreign make.

Therefore if, for example, glasses of + 1 D. are ordered, and the dealer, not having imported ones, gives his + 1 D. or + 40, they are manifestly too weak, just as an American + 36 is weaker than a Nachet's + 36.

This is easily verified even without a phakometre. On testing + 1 D. from my box (Roulot) with Badal's little phakometre it was found to be slightly stronger than an American + 36.

Now in many instances the difference between 36 and 40 might not be of any practical importance, while in others it might have a deleterious effect.

If the oculist corrects his patient's vision with a French or German lens, he naturally, in ordering, expects the optician to furnish one of the same power. In Dr. Landolt's paper on The Metrical System in Ophthalmology (R. L. O. H. Rep. May, 1876, translated by Dr. Swan Burnett) is a table similar to that appended to Snellen's Test-types, ed. 1875, which gives the refracting power in Paris inches of metric lenses, and which the writer has followed most satisfactorily for nearly nine years in prescribing spherical glasses from local dealers—though chiefly for patients of small means.

It is to be devoutly hoped that "approximation" may not be long required but it seems often necessary at present to those who live far from the madding crowd of our large towns.

Aside from the fact that a + 36 American lens is nearer the standard Dioptre (37 French inches) than is a + 40, it possesses, also, a further advantage in being a greater common multiple.

It seems desirable to start right in this matter. Now it is well-known that some years ago the U. S. Marine Hospital Service undertook to introduce cubic centimetres, instead of weights only, in prescription-writing, for which there was not any authority abroad.

Thus early in the adoption of the metric system as applied to oculists' orders, it surely would not be difficult—if thought best—to change the value of the "American Dioptre" as it stands to-day?

Salem, Mass., 1886. D. Coggin.